# *WSET Level 3 Award in Wines*

*A world of knowledge*

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# Session 2

# *Natural factors and human influences in the vineyard*

# *What are the factors that affect the style, quality and price of wines?*

| *Natural factors* | *Human factors* |
| --- | --- |
| • grapes | • grape growing |
| • climate | • winemaking |
| • weather | • maturation |
| • soil | • market forces |

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# Vine species

## Eurasian vines

*Vitis vinifera*

- used for **fruit production**

## American vines

- used for **rootstocks**

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# *Anatomy of the vine*

- green parts
- woody parts
- roots

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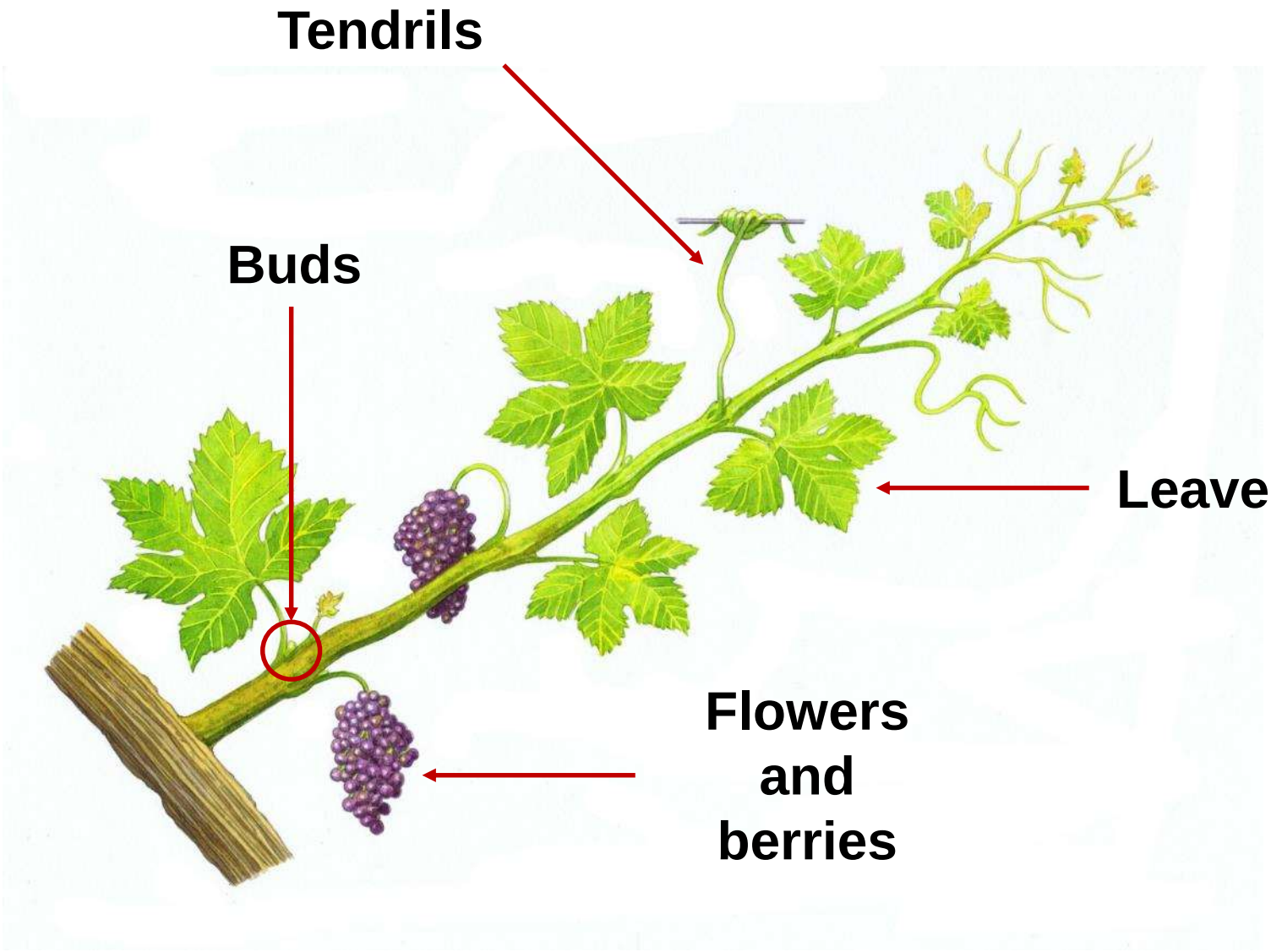
# *Green parts of the vine*

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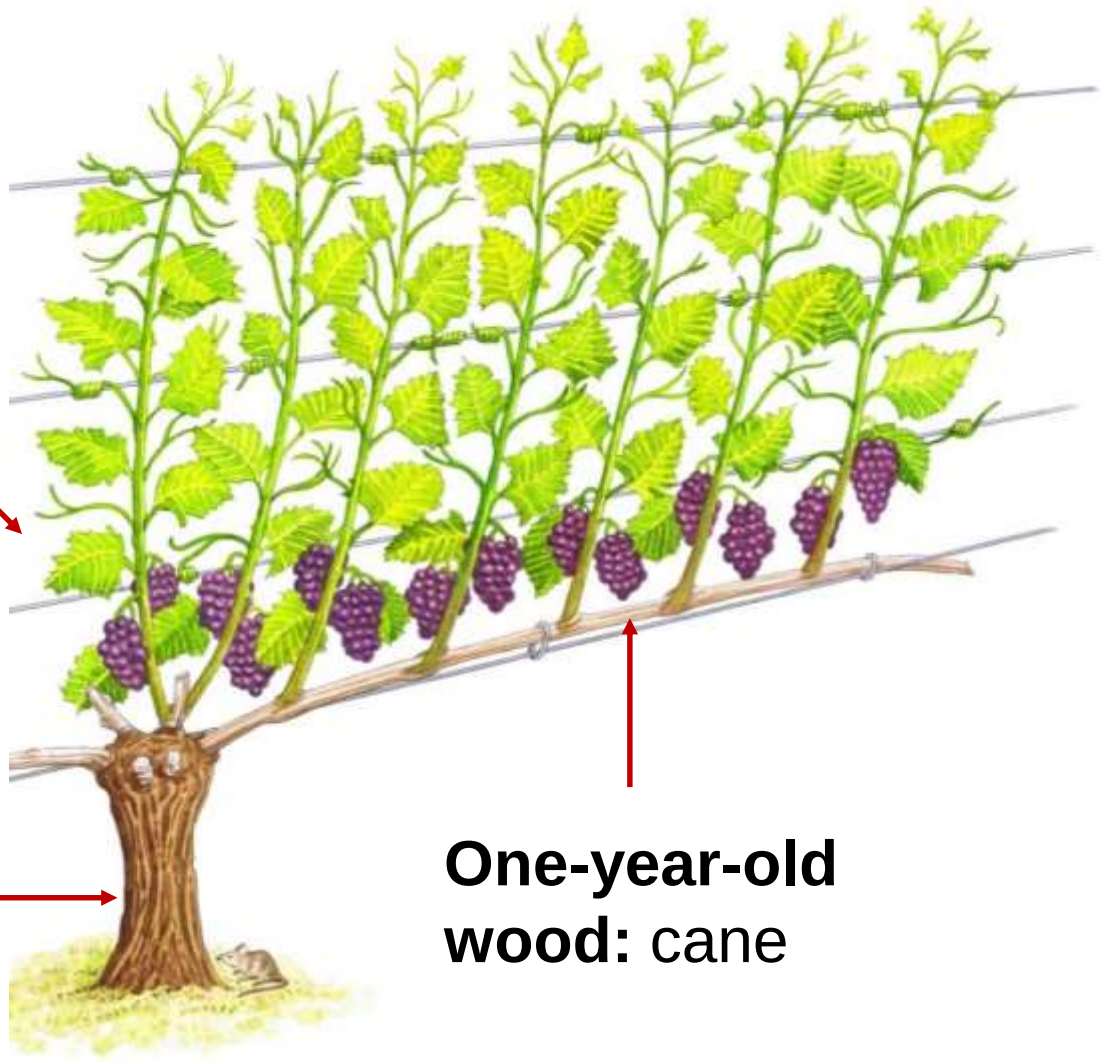
# *Woody parts of the vine*

**This year's shoots**



**Permanent wood**: trunk

**One-year-old wood:** cane

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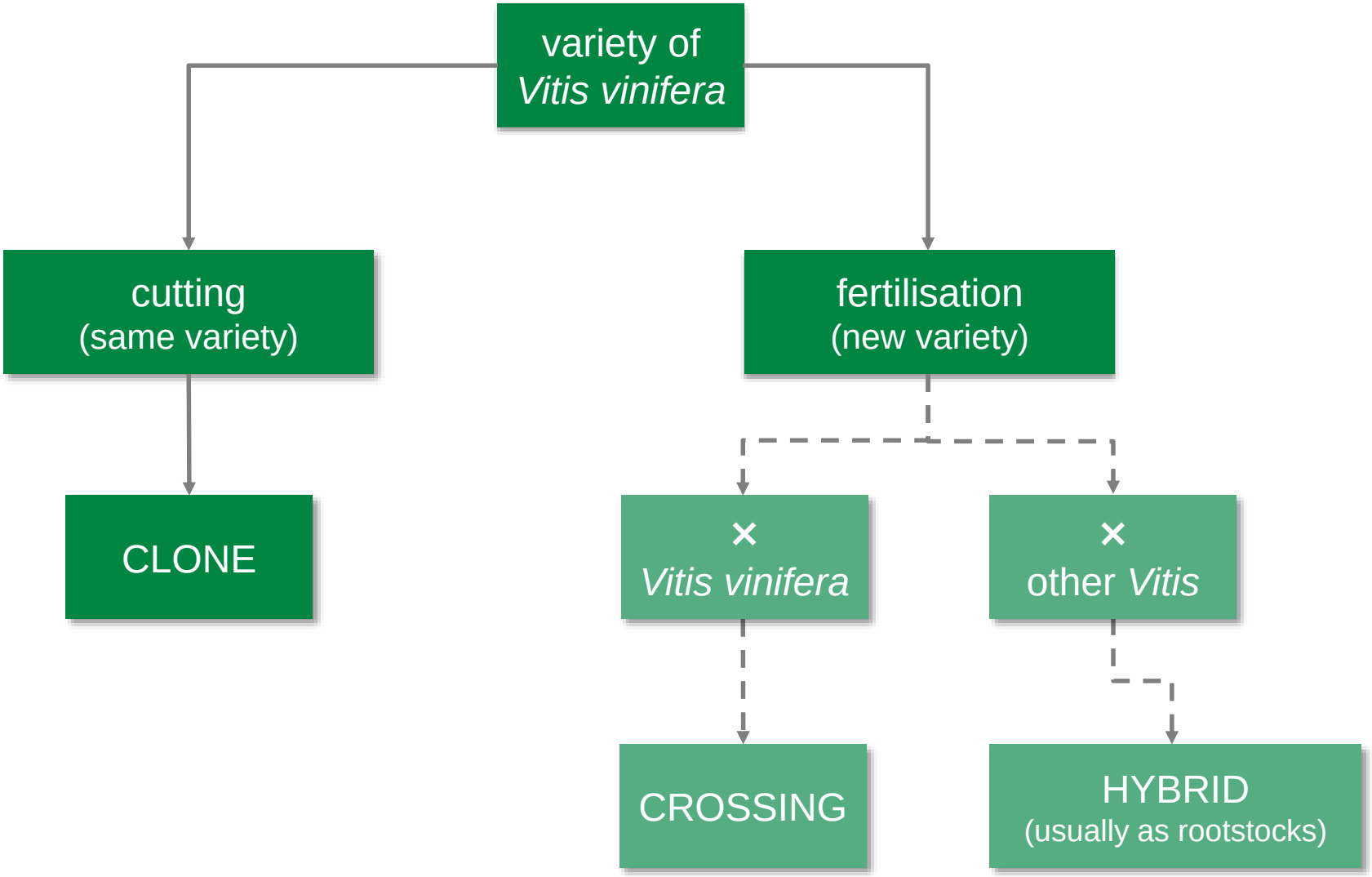
# *Roots*

- *phylloxera*
- rootstock
- grafting

# *Vine propagation*

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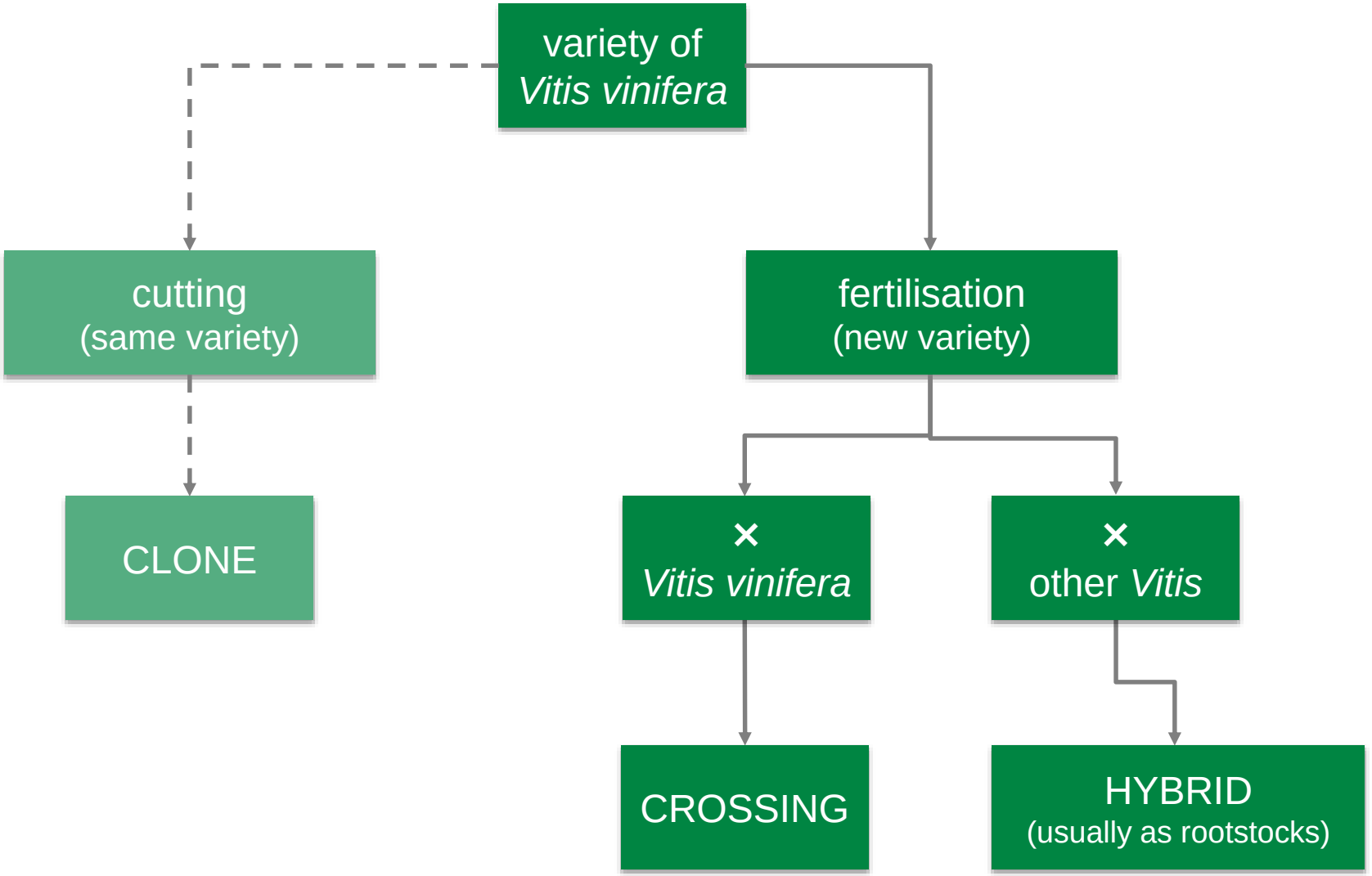
# *Vine propagation*

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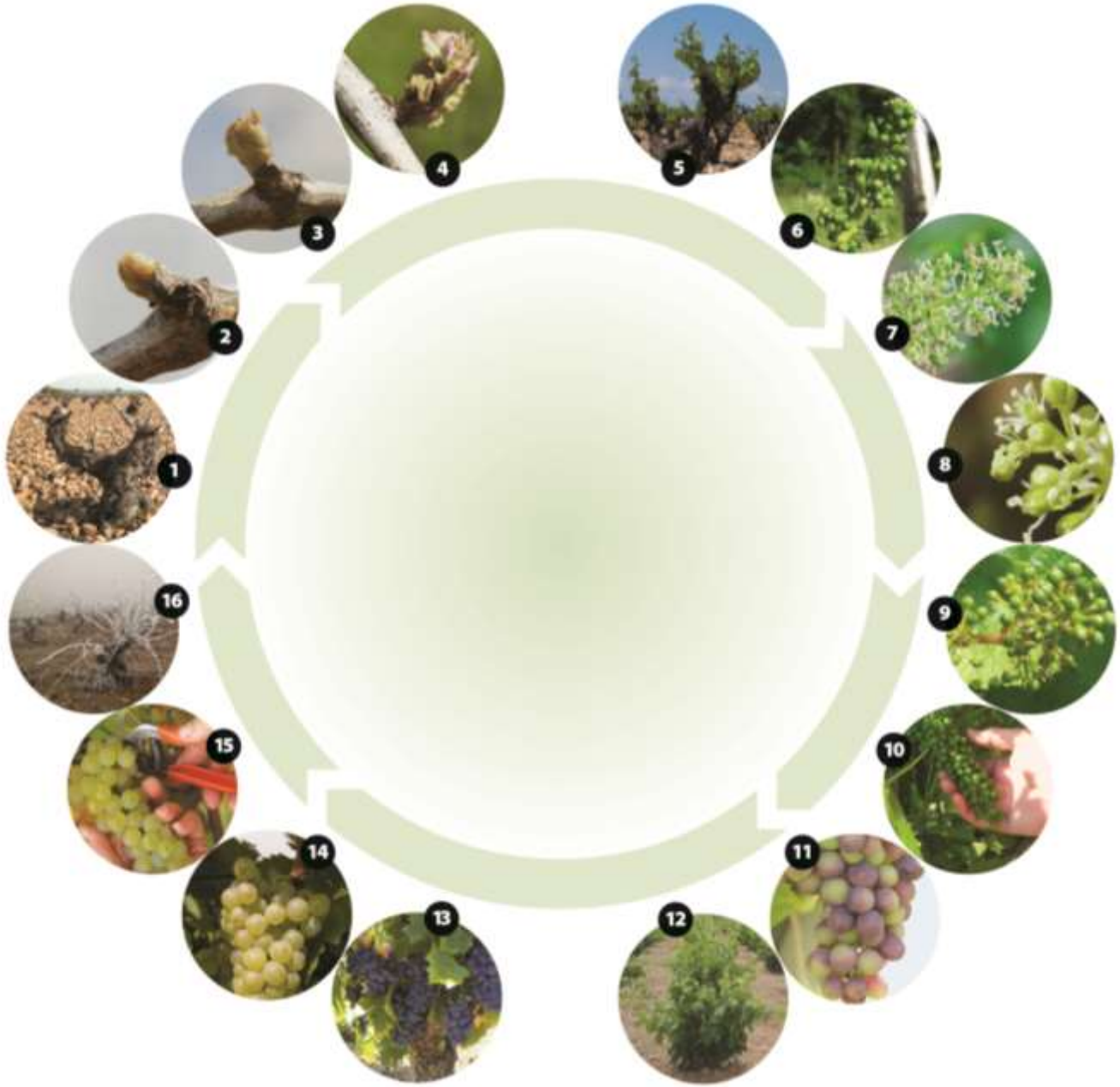
# *Annual growth cycle of a vine*

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# *Tasting – identify the grape variety*

| *Pinot Noir* | *Cabernet Sauvignon* | *Merlot* | *Syrah/Shiraz* |
|---|---|---|---|
| **Colour intensity:** | **Colour intensity:** | **Colour intensity:** | **Colour intensity:** |
| pale | deep | medium – deep | deep |
| **Tannins:** | **Tannins:** | **Tannins:** | **Tannins:** |
| low – medium | high | medium | medium – high |
| **Acidity:** | **Acidity:** | **Acidity:** | **Acidity:** |
| high | high | medium | medium |
| **Flavour characteristics:** | **Flavour characteristics:** | **Flavour characteristics:** | **Flavour characteristics:** |
| *strawberry* | *blackcurrant* | *strawberry* | *blackberry* |
| *raspberry* | *black cherry* | *red plum* | *black cherry* |
| *red cherry* | *green bell pepper* | *red cherry* | *black pepper* |

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# *Systematic Approach to Tasting*

| APPEARANCE | | |
|---|---|---|
| **Intensity** | | pale – medium – deep |
| **Colour** | *white* | lemon-green – lemon – gold – amber – brown |
| | *rosé* | pink – salmon – orange |
| | *red* | purple – ruby – garnet – tawny – brown |

| NOSE | |
|---|---|
| **Intensity** | light – medium(-) – medium – medium(+) – pronounced |
| **Aroma characteristics** | |
| **Primary** | |
| **Secondary** | |
| **Tertiary** | |
| **Development** | youthful – developing – fully developed – tired/past its best |

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# Systematic Approach to Tasting

| PALATE | |
|---|---|
| **Sweetness** | dry – off-dry – medium-dry – medium-sweet – sweet – luscious |
| **Acidity** | low – medium(-) – medium – medium(+) – high |
| **Tannin** | low – medium(-) – medium – medium(+) – high |
| **Alcohol** | low – medium – high |
| **Body** | light – medium(-) – medium – medium(+) – full |
| **Flavour intensity** | light – medium(-) – medium – medium(+) – pronounced |
| **Flavour characteristics** | |
| **Primary** | |
| **Secondary** | |
| **Tertiary** | |
| **Finish** | short – medium(-) – medium – medium(+) – long |

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# Systematic Approach to Tasting

| CONCLUSIONS<br>ASSESSMENT OF QUALITY | | | | |
|---|---|---|---|---|
| **Quality level** | faulty – poor – acceptable – good – very good – outstanding | | | |
| **Balance** | | | | |
| **Length** | | | | |
| **Intensity** | | | | |
| **Complexity** | | | | |
| **Level of readiness for drinking / potential for aging** | too young | can drink now, but has potential for ageing | drink now: not suitable for ageing or further ageing | too old |

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# *Tasting – identify the grape variety*

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| **Flavour characteristics:** | **Flavour characteristics:** | **Flavour characteristics:** | **Flavour characteristics:** |
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| *raspberry* | *black cherry* | *red plum* | *black cherry* |
| *red cherry* | *green bell pepper* | *red cherry* | *black pepper* |

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# What a vine needs

## Heat

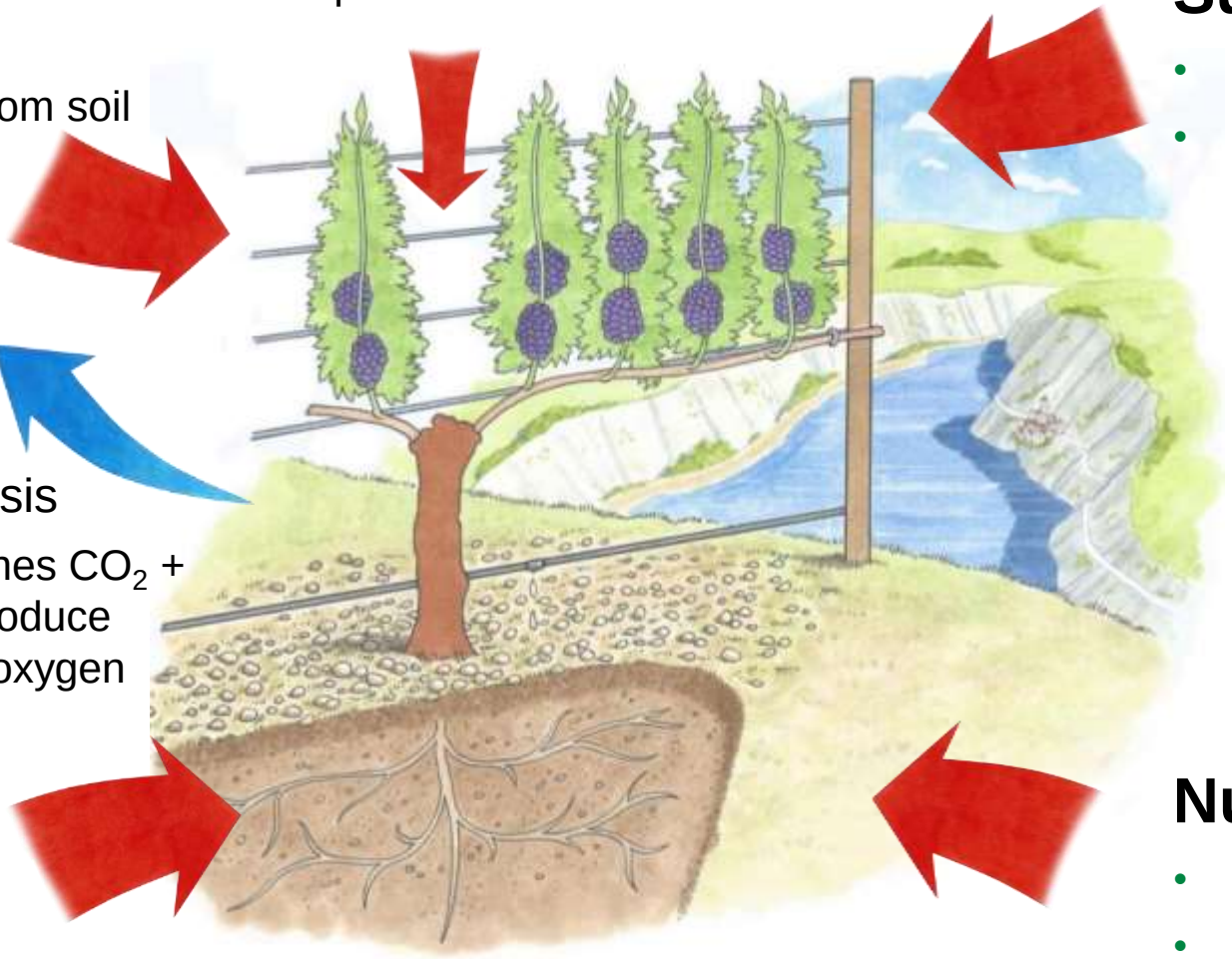
- sun
- reflected from soil

## Carbon Dioxide ($CO_2$)

- atmosphere

## Sunlight

- sun
- reflected from water



## Oxygen

Photosynthesis

- leaf combines $CO_2$ + water to produce glucose + oxygen

## Water

- rainfall
- irrigation
- water stored in soil

## Nutrients

- soil particles
- humus
- fertiliser

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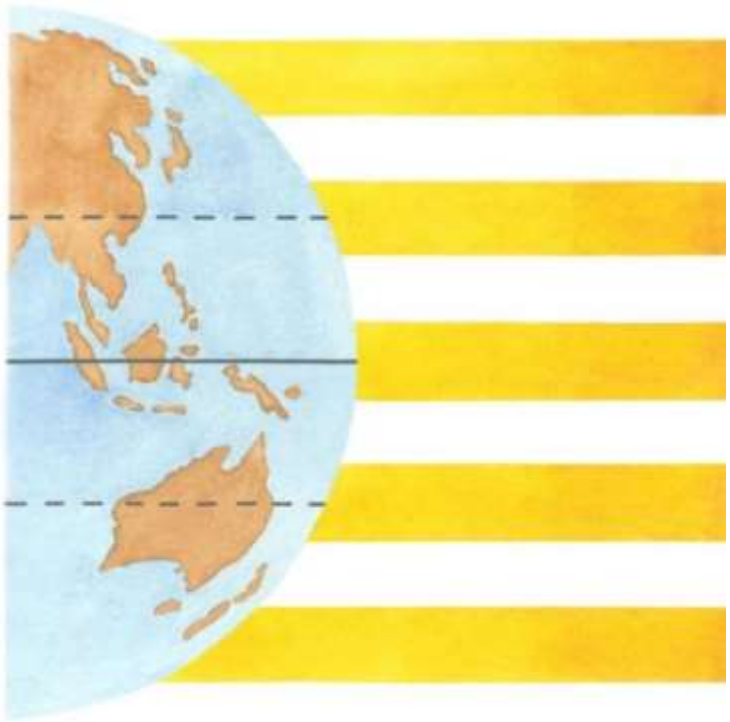
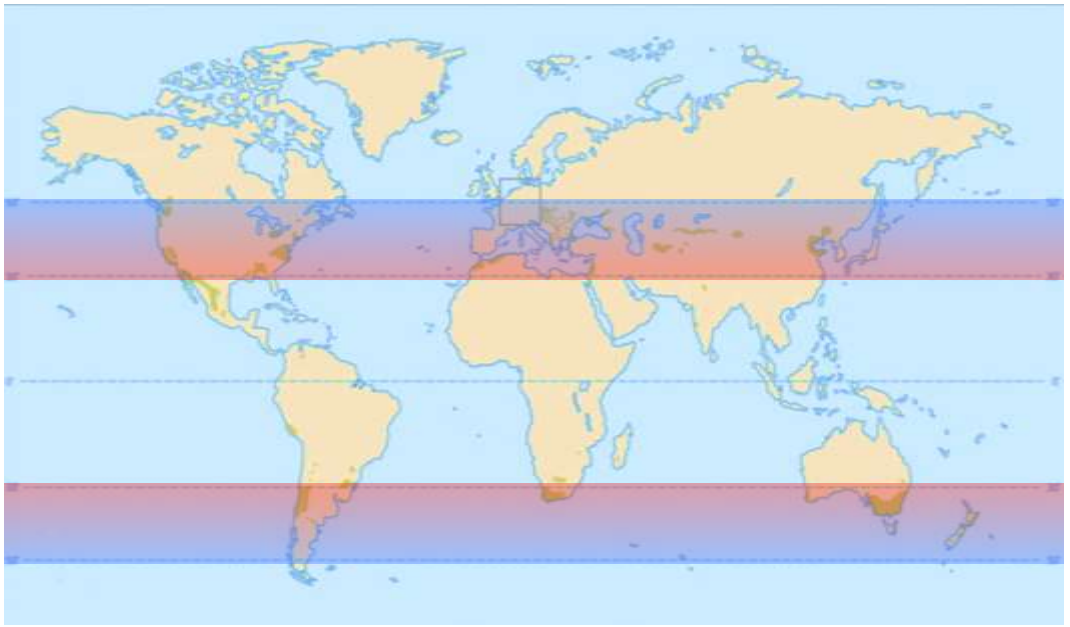
# *Climate classification*

A vine needs average temperatures of 16–22°C (61–72°F)





| Cool climate | Moderate climate | Warm climate | Hot climate |
|---|---|---|---|
| 16.5°C (62°F) or below | 16.5–18.5°C (62–65°F) | 18.5–21°C (65–70°F) | Above 21°C (70°F) |

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# Climate classification

- Continental climate
- Maritime climate
- Mediterranean climate

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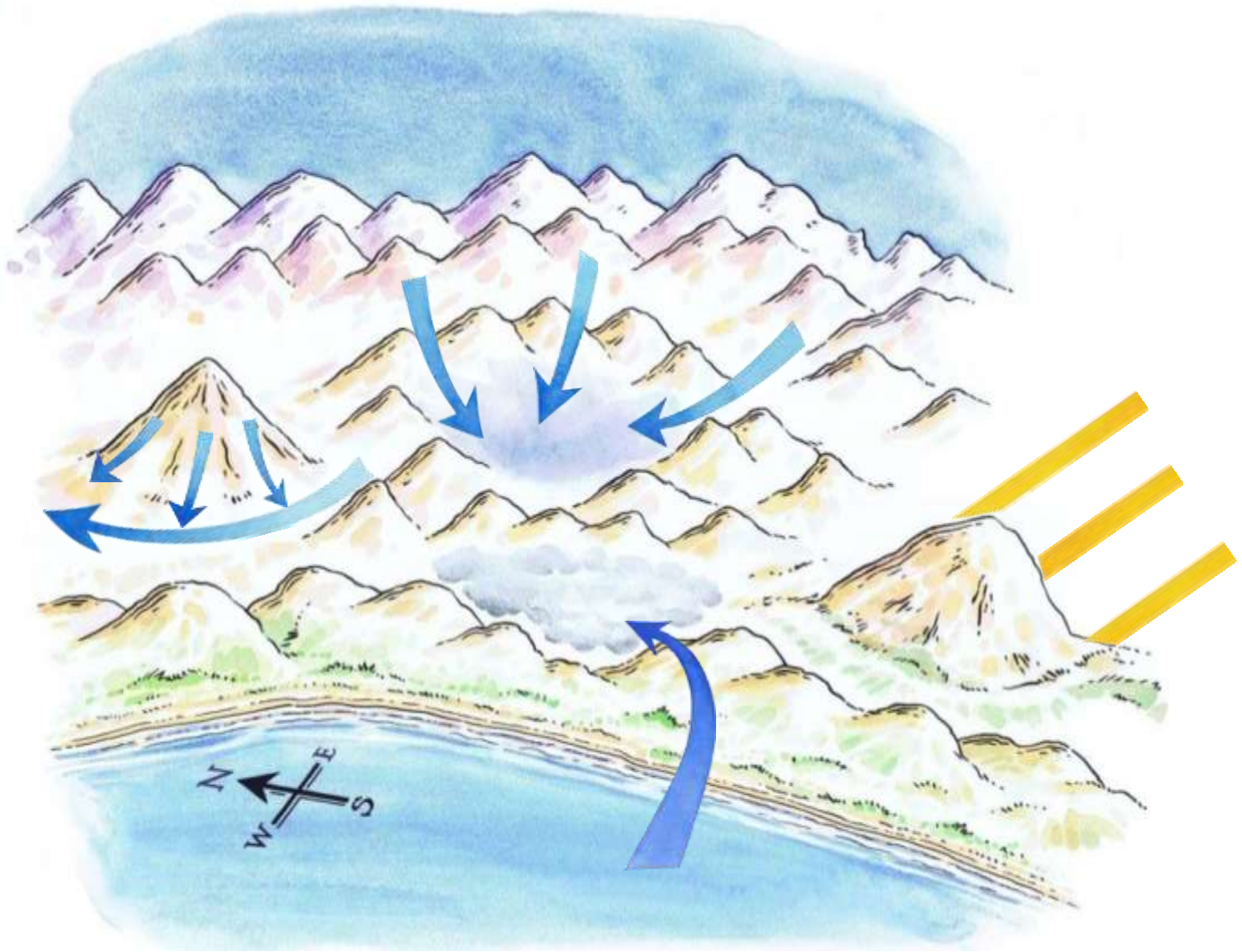
# *Factors that affect the climate of a vineyard*

- altitude
- diurnal range
- cooling effects from the ocean
- large bodies of water
- aspect
- soil

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# *Temperature hazards*

- winter freeze
- frost
- cold temperatures in spring
- excessive heat
- fires

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# Sunlight

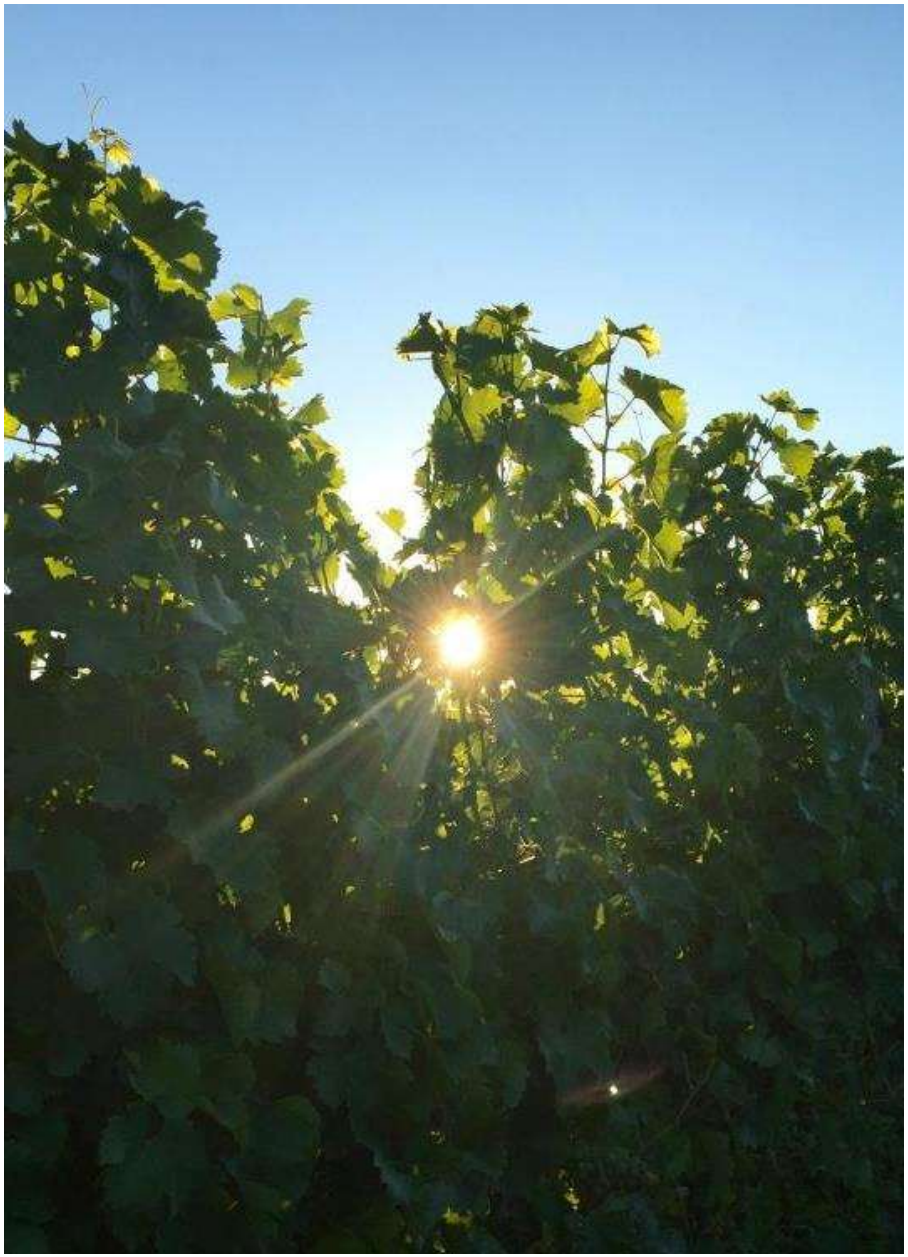
A vine needs sunlight to power photosynthesis

## Factors affecting sunlight

- latitude
- aspect
- seas
- lakes
- rivers

## Sunlight hazards

- too little
- too much



# Water

A vine needs water for photosynthesis

## Sources of water

- rain
- irrigation

(drip, sprinkler, flood)

## Water hazards

- drought
- too much
- hail

# Soil

## Composition

- stones
- humus
- nutrients

## Soil and water

- The best soils are well drained retaining only just enough water

## Nutrients

- too much ➡ vigorous growth
- too little ➡ ill health (chlorosis)

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# *Vineyard management*

Why does a vineyard need to be managed?

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# Managing the vine

## Pruning

- removal of unwanted leaves, shoots or wood
- winter
- summer

## Training

- moulding the vines wood and shoots to the required shape

## Trellis

- stakes and wires used to support the trained vines

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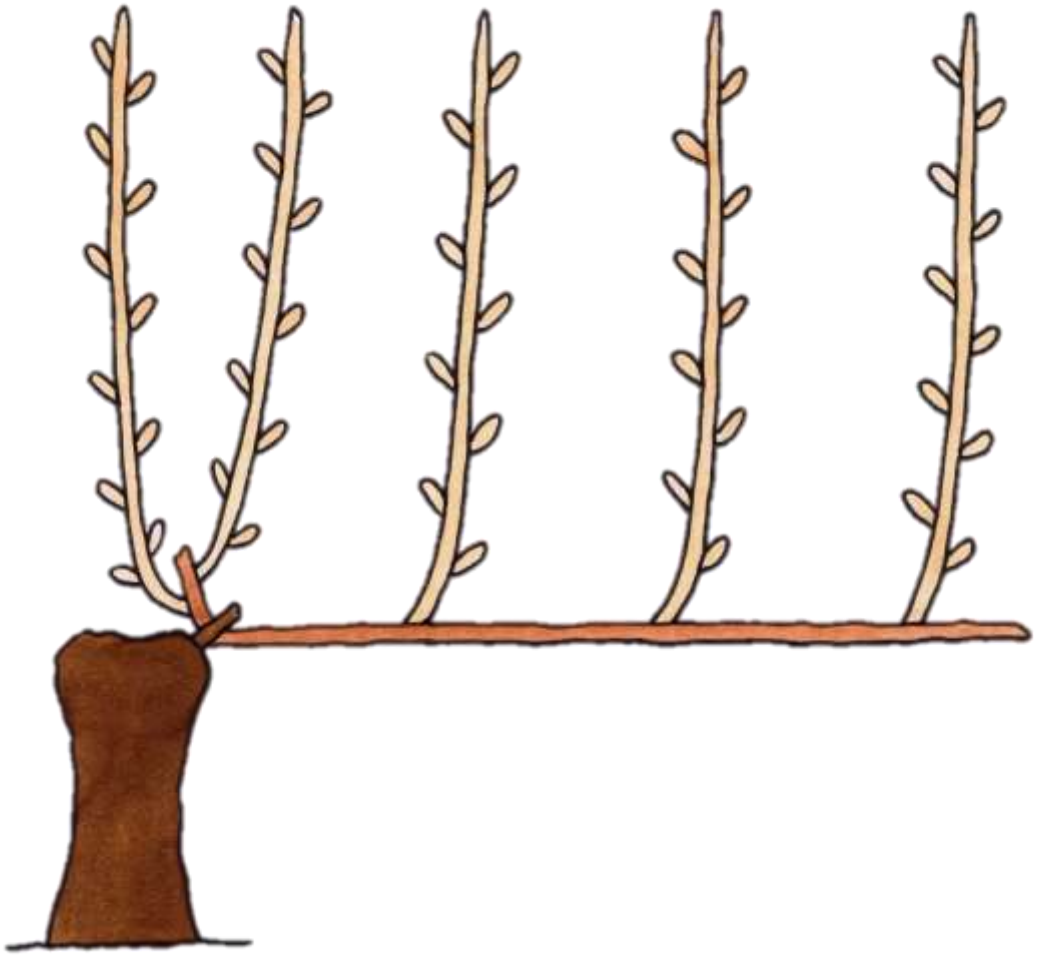
# *Winter pruning – replacement cane*

Vine left with one or two canes



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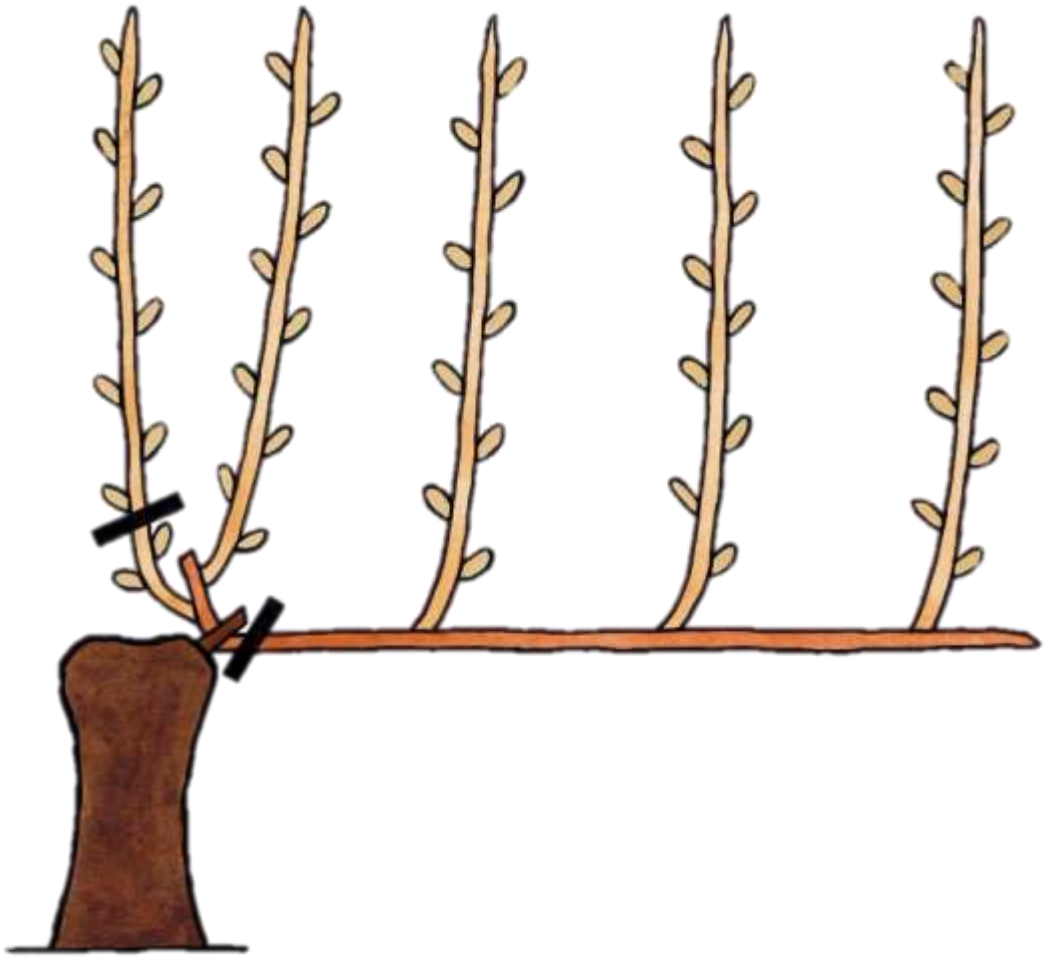
# *Winter pruning – replacement cane*



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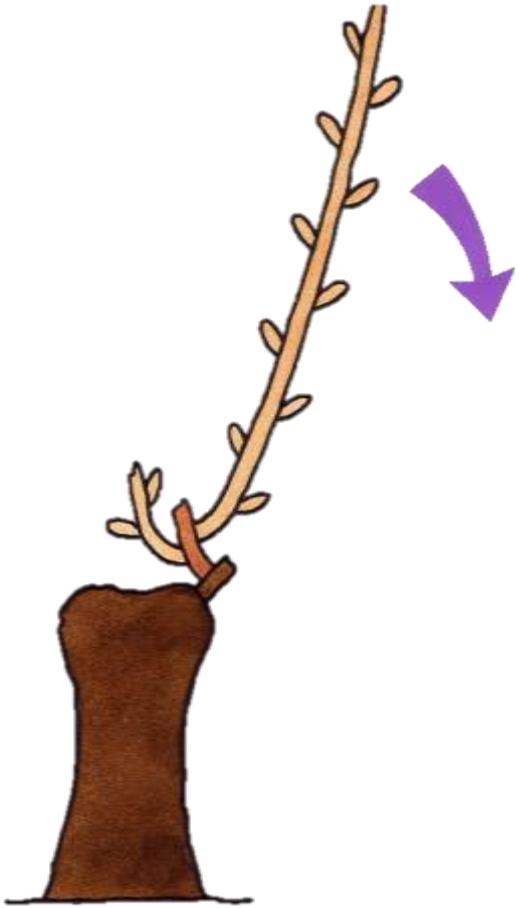

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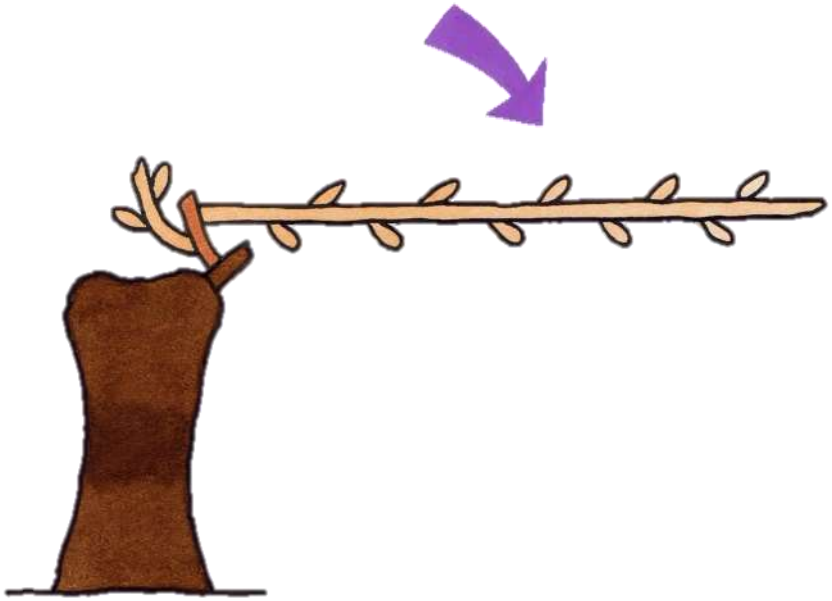
# *Winter pruning – replacement cane*



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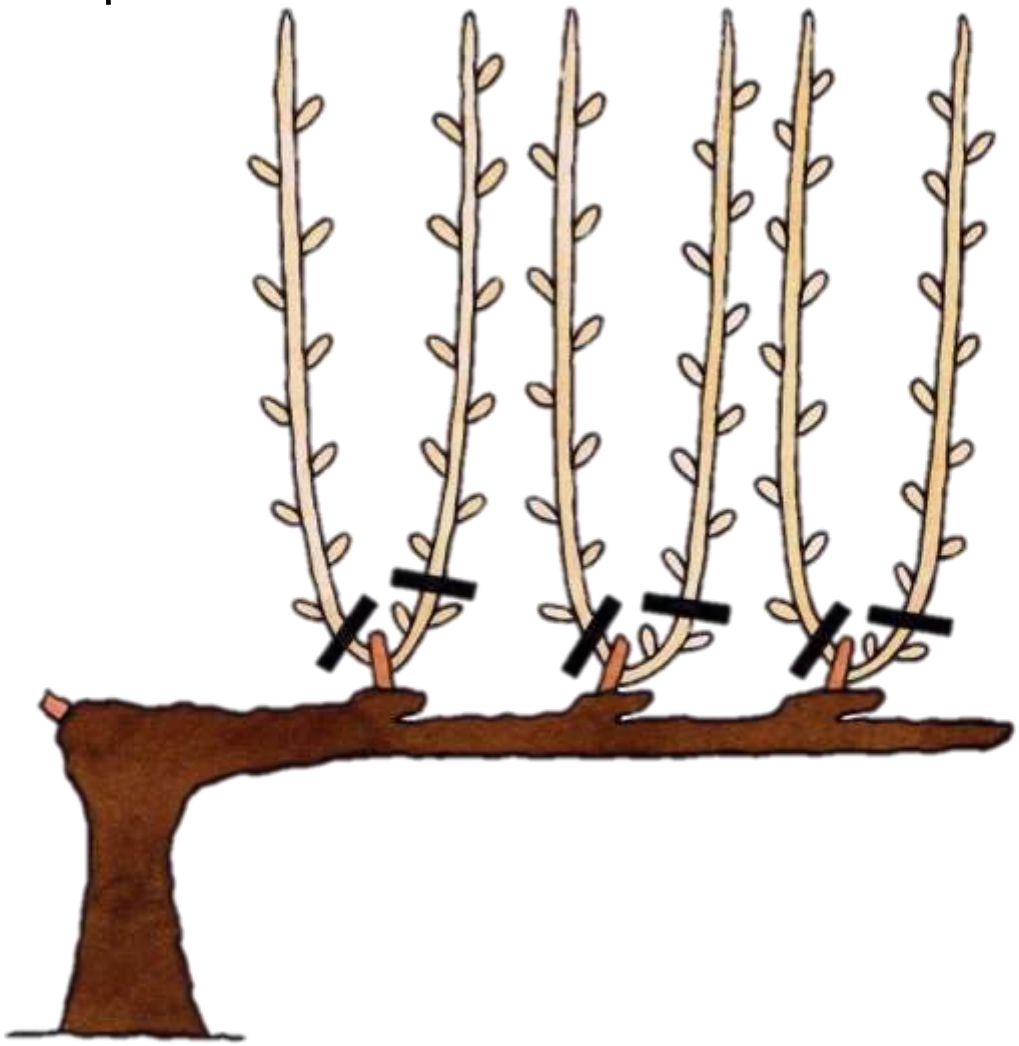
# *Winter pruning – spur (cordon)*

Vine left with several spurs



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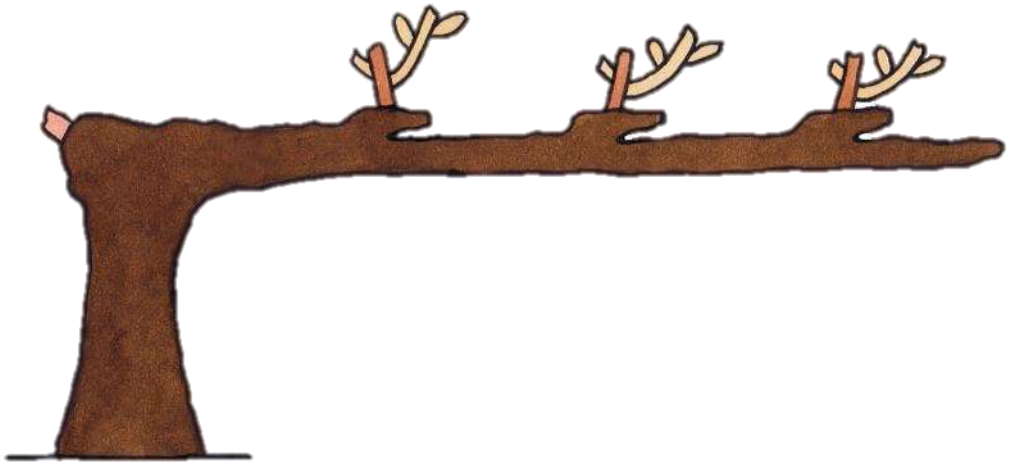
# *Winter pruning – spur (cordon)*



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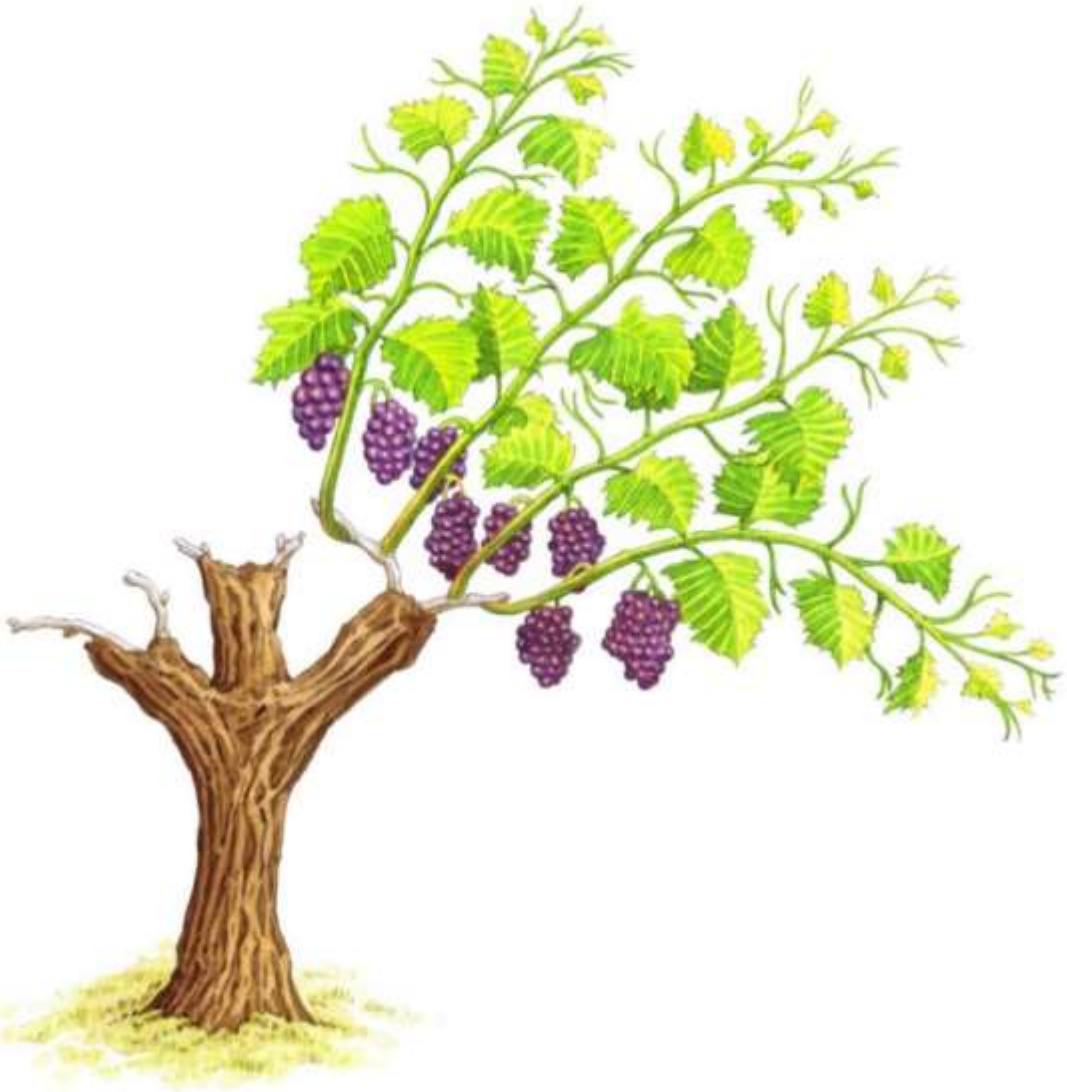
# *Winter pruning – spur (head trained)*



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# *Pruning, training and trellising*

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# *Vine density*

- very limited water availability
- low levels of nutrients and sufficient rainfall
- high levels of nutrients and sufficient rainfall

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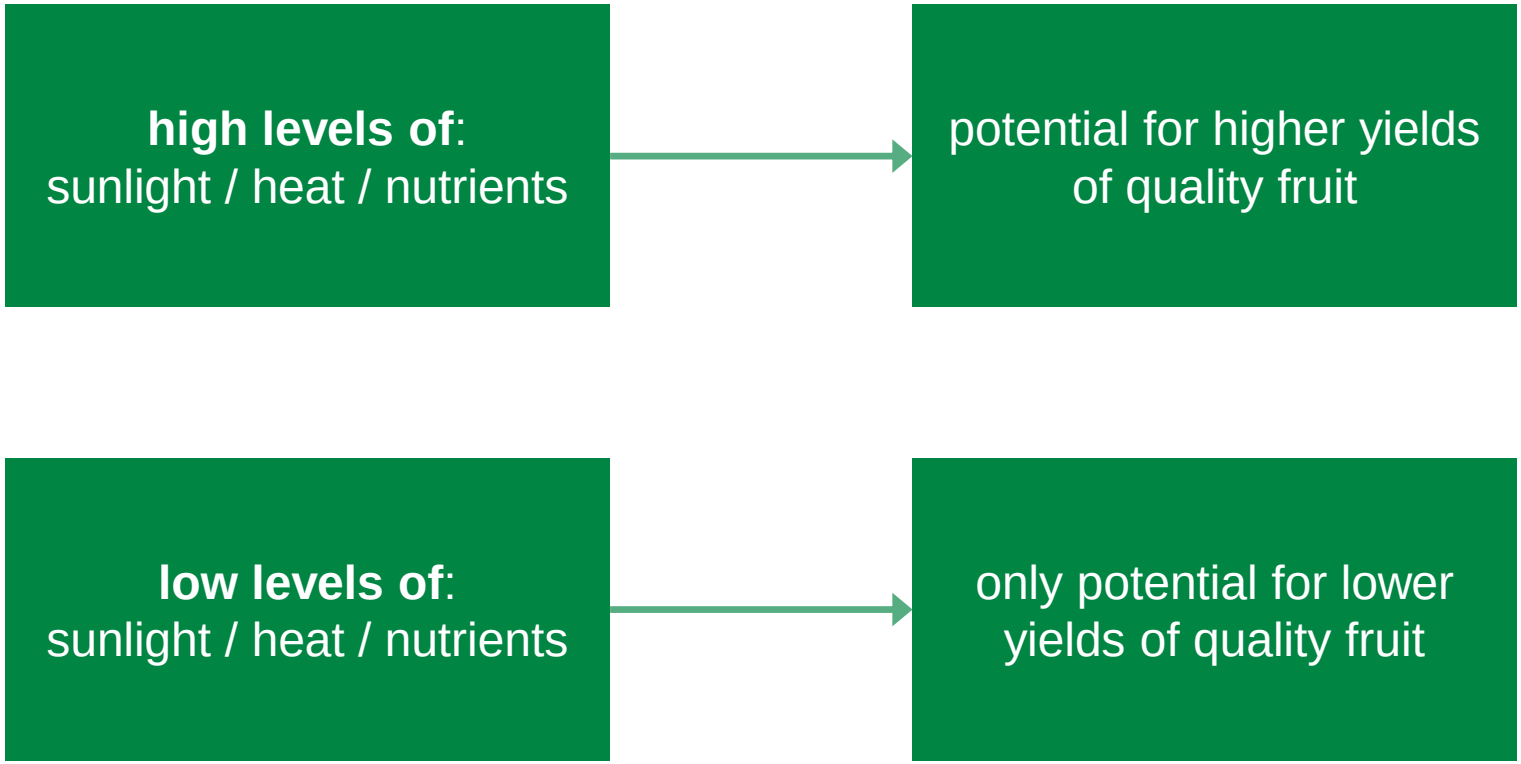
# *Yield and quality*


**high levels of**:
sunlight / heat / nutrients
potential for higher yields of quality fruit
**low levels of**:
sunlight / heat / nutrients
only potential for lower yields of quality fruit

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# *Pests and diseases*

## Risks

- limits a vine's photosynthetic capability
- damage/destroy fruit

## Treatment and management

- rootstocks
- physical barriers
- chemical sprays
- canopy management

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# *Pests*

- *phylloxera*
- nematodes
- birds and mammals
- insects

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# *Fungal Diseases*

- downy mildew
- powdery mildew
- grey rot

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# *Other diseases*

- viruses
- bacterial diseases

# *Viticultural practices*

- conventional agriculture
- sustainable agriculture
- organic agriculture
- biodynamic agriculture

# Harvest

Machine harvesting

Hand harvesting

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